

CLAIMS

1. A tomograph including a scanning system that includes
a generation means for generating radiation to be irradiated
5 to a subject, and a detection means opposed to the generating
means in order to detect the radiation transmitted by the subject,
and a rotation means for rotating the scanning system about
the subject, and reconstructing a tomographic image of the
subject using a plurality of transmitted images produced by
10 projecting the radiation from a plurality of rotational angular
positions while rotating the scanning system about the subject,
comprising:

a first storage means in which measured images that are
three or more transmitted images produced by rotating the
15 scanning system about a plurality of phantoms including at least
one phantom whose section perpendicular to an axis of rotation
of the scanning system has different dimensions in two directions
orthogonal to the axis of rotation are stored;

a production means for producing calculated images as the
20 transmitted images through calculation;

a second storage means in which the produced calculated
images are stored; and

a correction means for correcting intensities, which are
represented by the transmitted images of the subject, according
25 to the measured images and calculated images.

2. The tomograph according to Claim 1, wherein the section of the at least one phantom perpendicular to the axis of rotation is substantially elliptic.

5

3. The tomograph according to Claim 1, wherein the section of at least one of the plurality of phantoms perpendicular to the axis of rotation is shaped substantially like a circle, and the center of the circle is not aligned with the axis of
10 rotation.

4. The tomograph according to Claim 2, wherein the section of at least one of the plurality of phantoms perpendicular to the axis of rotation is shaped substantially like a circle,
15 and the center of the circle is not aligned with the axis of rotation.

5. A tomograph including a scanning system that includes a generation means for generating radiation to be irradiated
20 to a subject, and a detection means opposed to the generating means in order to detect the radiation transmitted by the subject, and a rotation means for rotating the scanning system about the subject, and reconstructing a tomographic image of the subject using a plurality of transmitted images produced by
25 projecting the radiation from a plurality of rotational angular

positions while rotating the scanning system about the subject,
comprising:

a first storage means in which measured images that are
three or more transmitted images produced by rotating the
5 scanning system about a plurality of phantoms including at least
one phantom whose section perpendicular to an axis of rotation
of the scanning system is shaped substantially like a circle
whose center is not aligned with the axis of rotation are stored;

10 a production means for producing calculated images as the
transmitted images through calculation;

a second storage means in which the produced calculated
images are stored; and

15 a correction means for correcting intensities, which are
represented by the transmitted images of the subject, according
to the measured images and calculated images.

6. The tomograph according to Claim 5, wherein the section
of at least one of the plurality of phantoms perpendicular to
the axis of rotation is substantially elliptic.

20

7. The tomograph according to Claim 5, wherein the section
of at least one of the plurality of phantoms perpendicular to
the axis of rotation is shaped substantially like a circle,
and the center of the circle is substantially aligned with the
25 axis of rotation.

8. The tomograph according to Claim 1, further comprising
a phantom position calculation means for calculating the center
position of a section of a phantom and an inclination of the
phantom with respect to the direction parallel to the section
according to the tomographic image of the phantom reconstructed
based on the measured images, wherein:

the production means determines a direction of projection,
in which the radiation is projected in order to produce the
calculated images, according to the center position and
inclination.

9. The tomograph according to Claim 5, further comprising
a phantom position calculation means for calculating the center
position of a section of a phantom and an inclination of the
phantom with respect to the direction parallel to the section
according to the tomographic image of the phantom reconstructed
based on the measured images, wherein:

the production means determines a direction of projection,
in which the radiation is projected in order to produce the
calculated images, according to the center position and
inclination.

25 10. The tomograph according to Claim 8, wherein the phantom

position calculation means calculates the center position of a section of a phantom according to the barycentric position in a distribution of signal intensities represented by the tomographic image of the phantom.

5

11. The tomograph according to Claim 9, wherein the phantom position calculation means calculates the center position of a section of a phantom according to the barycentric position in a distribution of signal intensities represented by the 10 tomographic image of the phantom.

12. The tomograph according to Claim 8, wherein the phantom position calculation means calculates the inclination of a phantom with respect to the direction parallel to the section 15 of the phantom by performing linear approximation on a distribution of signal intensities represented by the tomographic image of the phantom.

13. The tomograph according to Claim 9, wherein the phantom 20 position calculation means calculates the inclination of a phantom with respect to the direction parallel to the section of the phantom by performing linear approximation on a distribution of signal intensities represented by the tomographic image of the phantom.

25

14. A tomograph including a scanning system that includes
a generation means for generating radiation to be irradiated
to a subject, and a detection means opposed to the generating
5 means in order to detect the radiation transmitted by the subject,
and a rotation means for rotating the scanning system about
the subject, and reconstructing a tomographic image of the
subject using a plurality of transmitted images produced by
projecting the radiation from a plurality of rotational angular
10 positions while rotating the scanning system about the subject,
comprising:

a first storage means in which measured images that are
three or more transmitted images produced by rotating the
scanning system about a plurality of phantoms including at least
15 one phantom whose section perpendicular to an axis of rotation
of the scanning system has different dimensions in two directions
orthogonal to the axis of rotation are stored;

a production means for producing calculated images as the
transmitted images through calculation;

20 a second storage means in which the produced calculated
images are stored;

a parameter value derivation means for deriving parameter
values to be assigned to an approximation function by fitting
the approximation function close to the relationship between
25 the signal intensities represented by the measured images and

the signal intensities represented by the calculated images;

a third storage means in which the parameter values are stored; and

a correction means for correcting intensities, which are

5 represented by the transmitted images of the subject, according to the measured images and calculated images.

15. A tomograph including a scanning system that includes a generation means for generating radiation to be irradiated 10 to a subject, and a detection means opposed to the generating means in order to detect the radiation transmitted by the subject, and a rotation means for rotating the scanning system about the subject, and reconstructing a tomographic image of the subject using a plurality of transmitted images produced by 15 projecting the radiation from a plurality of rotational angular positions while rotating the scanning system about the subject, comprising:

a first storage means in which measured images that are three or more transmitted images produced by rotating the 20 scanning system about a plurality of phantoms including at least one phantom whose section perpendicular to an axis of rotation of the scanning system is shaped substantially like a circle whose center is not aligned with the axis of rotation are stored;

a production means for producing calculated images as the 25 transmitted images through calculation;

a second storage means in which the produced calculated images are stored;

a parameter value derivation means for deriving parameter values to be assigned to an approximation function by fitting
5 the approximation function close to the relationship between the signal intensities represented by the measured images and the signal intensities represented by the calculated images;

a third storage means in which the parameter values are stored; and

10 a correction means for correcting intensities, which are represented by the transmitted images of the subject, according to the measured images and calculated images.